

ABSTRACT OF THE INVENTION

A method and resultant product are disclosed wherein a metal film is deposited by sputtering a metal cathode target in an essentially nonreactive atmosphere comprising inert gas and a reactive gas, wherein the concentration of reactive gas is sufficiently low that the sputtering is accomplished in the metallic mode, i.e. the film is deposited as metal. The metal film of the present invention is harder than a metal film sputtered in an atmosphere consisting of only inert gas. The method and resultant product may further comprise thermal oxidation of the metal film, which proceeds more efficiently than oxidation of a metal film sputtered in an atmosphere consisting of only inert gas.